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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,124	04/10/2004	Yin Liu	P1505	2468

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EXAMINER	
THOMAS, BRANDI N	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EV

Office Action Summary	Application No.	Applicant(s)	
	10/822,124	LIU, YIN	
	Examiner	Art Unit	
	Brandi N. Thomas	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2005 (RCE)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-13 and 15-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-13 and 15-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Detailed Action*.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/18/05 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-7, 10-13, and 15-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Robinson et al. (6031657).

Regarding claim 1, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, comprising: a light source (102) that emits collimated light (col. 8, lines 7-9); a reflective imager (30) that angularly modulates the collimated light (col. 8, lines 22-25), said angularly modulated light being turned back through a field lens (112) and focused onto a Schlieren stop (110) plane (col. 8, lines 25-27), said imager (30) comprising a vacuum envelope (34) (col. 7, lines 15-16); a electron-beam controlled mirror (ECM) array (32) mounted in said vacuum envelope (34) (col. 7, lines 14-15), consisting of: a transparent substrate (42) (col.7,

lines 22-24); a transparent, electro-conductive layer on said transparent substrate (col. 4, lines 59-63 and col. 7, lines 42-45); a conductive micro-mirror array (41) integrated onto and in electrical contact with said electro-conductive layer that are all held at a reference potential (col. 7, lines 21-24); a floating-potential dielectric membrane (43) supported by an array of insulating posts (68) above said array of micro-mirrors (col. 7, lines 26-34 and 65-66); and a focusable electron source (44) that emits primary electrons that are accelerated and strike portions of said dielectric membrane (43) above the respective micro-mirrors (41) causing a fixed charge pattern on said membrane (43) (col. 7, lines 29-39), and a field lens (112) that focuses the collimated light component from said ECM array (32) onto said Schlieren stop (110) plane (col. 8, lines 25-27); and a Schlieren stop (110) at said Schlieren stop plane that converts the angularly modulated light into intensity modulated light (col. 8, lines 27-29); and a projection lens (116) that focuses the intensity modulated light onto a viewing screen to form an image (col. 8, lines 29-31).

Regarding claim 2, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said transparent, electro-conductive layer is an aperture patterned conducting plane (col. 7, lines 42-45 and 53-55).

Regarding claim 3, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said floating-potential dielectric membrane (43) is a semiconducting membrane (col. 7, lines 27-28 and 58-59).

Regarding claim 5, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, further comprising a color wheel (114) such that the display of color image video is carried out by continuously displaying multiple mono-color images in a temporally multiplexed fashion (col. 8, lines 16-21).

Regarding claim 6, Robinson et al. discloses, in figure 5, a projection display, wherein said light is split into a plurality of color components, said projection display comprising the same plurality of said reflective imagers (152a-152c) that spatially modulate the respective color components (col. 9, lines 1-16).

Regarding claim 7, Robinson et al. discloses, in figures 9-11, a projection display, wherein said imager further comprises an array of attractor pads (258a-258d) on said electron source side of said membrane (257) that are aligned with said micro-mirror array (250a-250d), said source writing charge pattern onto said attractor pads (258a-258d) such that each micro-mirror's charge is distributed approximately uniformly across the corresponding attractor pad (258a-258d) (col. 9, lines 63-67 and col. 10, lines 19-32).

Regarding claim 10, Robinson et al. discloses, in figures 9-11, a projection display, wherein said micromirror array (250a-250d) is configured with cloverleaf arrays of four centrally joined cantilever beams (250a-250d) that share common post regions (252) on said electro-conductive layer (col. 9, lines 63-67 and col. 10, lines 20-21).

Regarding claim 11, Robinson et al. discloses, in figures 9-11, a projection display, wherein said micromirror array is made of metal (col. 3, lines 11-12).

Regarding claim 12, Robinson et al. discloses a projection display, wherein said micromirror array is made of dielectric material with both side covered with metal (col. 6, lines 10-11).

Regarding claim 13, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said charge pattern increases the localized membrane potentials so that the

potential differences between said membrane (43) and said micromirrors (41) produces the finely-defined attractive electrostatic forces (col. 7, lines 24-31).

Regarding claim 15, Robinson et al. discloses, in figures 9-11, a projection display, wherein said imager further comprising an attractor pad array (258a-258d) on the backside of said membrane (257) that are aligned with said cantilever beams (250a-250d) (col. 10, lines 19-21).

Regarding claim 16, Robinson et al. discloses, in figures 9-11, a projection display, wherein said attractor pad array (258a-258d) includes one said attractor pad per cantilever beam (250a-250d) (col. 10, lines 19-21).

Regarding claim 17, Robinson et al. discloses, in figures 9-11, a projection display, wherein said insulating posts (226) are on said substrate (222) in said common posts regions (252) and formed integrally with said membrane (257) (col. 10, lines 36-43).

Regarding claim 18, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, comprising: a light source (102) that emits collimated light (col. 8, lines 7-9); a reflective imager (30) that angularly modulates the collimated light (col. 8, lines 22-25), said angularly modulated light being turned back through a field lens (112) and focused onto a Schlieren stop (110) plane (col. 8, lines 25-27), said imager (30) comprising a vacuum envelope (34) (col. 7, lines 15-16); a electron-beam controlled mirror (ECM) array (32) mounted in said vacuum envelope (34) (col. 7, lines 14-15), comprising: a transparent substrate (42) (col.7, lines 22-24); a transparent, electro-conductive layer on said transparent substrate (col. 4, lines 59-63 and col. 7, lines 42-45); a conductive micro-mirror array (41) integrated onto and in electrical contact with said electro-conductive layer that are all held at a reference potential (col. 7, lines

21-24); a floating-potential dielectric membrane (43) supported by an array of insulating posts (68) above said array of micro-mirrors (col. 7, lines 26-34 and 65-66); and a conductive collector grid array (44) being held at a collector potential with respect to a mirror voltage but does not specifically disclose the collector gird array attached onto said dielectric membrane; however it is inherent to modify the invention and attach the collector grid array to the dielectric membrane this being reasonably based upon the collector grid performing the same function in either position, a focusable electron source (44, the collector grid does the same function) that emits primary electrons that are accelerated and strike portions of said dielectric membrane (43) above the respective micro-mirrors (41) causing a fixed charge pattern on said membrane (43) (col. 7, lines 29-39), and a field lens (112) that focuses the collimated light component from said ECM array (32) onto said Schlieren stop (110) plane (col. 8, lines 25-27); and a Schlieren stop (110) at said Schlieren stop plane that converts the angularly modulated light into intensity modulated light (col. 8, lines 27-29); and a projection lens (116) that focuses the intensity modulated light onto a viewing screen to form an image (col. 8, lines 29-31).

Regarding claim 19, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said collector grid (44) is biased when a collector grid potential is less than a threshold potential, wherein potential differences between said membrane (43) and said micromirrors (41) produces finely-defined attractive electrostatic forces, whereby said micromirrors (41) are susceptible to snap over when said potential difference exceeds said threshold potential (col. 7, lines 24-39).

Regarding claim 20, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said transparent, electro-conductive layer is an aperture patterned conducting plane (col. 7, lines 42-45 and 53-55).

Regarding claim 21, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, wherein said floating-potential dielectric membrane (43) is a semiconducting membrane (col. 7, lines 27-28 and 58-59).

Regarding claim 22, Robinson et al. discloses, in figures 2a, 2b, and 3, a projection display, further comprising a color wheel (114) such that the display of color image video is carried out by continuously displaying multiple mono-color images in a temporally multiplexed fashion (col. 8, lines 16-21).

Regarding claim 23, Robinson et al. discloses, in figure 5, a projection display, wherein said light is split into a plurality of color components, said projection display comprising the same plurality of said reflective imagers (152a-152c) that spatially modulate the respective color components (col. 9, lines 1-16).

Regarding claim 24, Robinson et al. discloses, in figures 9-11, a projection display, wherein said imager further comprises an array of attractor pads (258a-258d) on said electron source side of said membrane (257) that are aligned with said micro-mirror array (250a-250d), said source writing charge pattern onto said attractor pads (258a-258d) such that each micro-mirror's charge is distributed approximately uniformly across the corresponding attractor pad (258a-258d) (col. 9, lines 63-67 and col. 10, lines 19-32).

Regarding claim 25, Robinson et al. discloses, in figures 9-11, a projection display, wherein said micromirror array (250a-250d) is configured with cloverleaf arrays of four centrally

joined cantilever beams (250a-250d) that share common post regions (252) on said electro-conductive layer (col. 9, lines 63-67 and col. 10, lines 20-21).

Regarding claim 26, Robinson et al. discloses, in figures 9-11, a projection display, wherein said imager further comprising an attractor pad array (258a-258d) on the backside of said membrane (257) that are aligned with said cantilever beams (250a-250d) (col. 10, lines 19-21).

Regarding claim 27, Robinson et al. discloses, in figures 9-11, a projection display, wherein said attractor pad array (258a-258d) includes one said attractor pad per cantilever beam (250a-250d) (col. 10, lines 19-21).

Regarding claim 28, Robinson et al. discloses, in figures 9-11, a projection display, wherein said insulating posts (226) are on said substrate (222) in said common posts regions (252) and formed integrally with said membrane (257) (col. 10, lines 36-43).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson et al. (6031657) as applied to claim 1 above, and further in view of Someya et al. (6329966 B1).

Regarding claim 8, Robinson et al. discloses, in figure 3, a projection display but does not specifically disclose wherein said light source emits infrared components of light for producing

infrared image on said screen. However, Someya et al. discloses wherein said light source (1) emits infrared components of light for producing infrared image on said screen (col. 5, lines 57-65). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Robinson et al. with the infrared light source of Someya et al. for the purpose of producing an infrared image (col. 5, lines 57-65).

Regarding claim 9, Someya et al. discloses a projection display, wherein said light source emits ultraviolet components of light for producing ultraviolet image on said screen (col. 2, lines 50-60).

Response to Arguments

6. Applicant's arguments with respect to claims 1-3, 5-13, and 15-28 have been considered but are moot in view of the new ground(s) of rejection. Regarding claim 1, the collector grid of Robinson et al. performs the same function as the focusable electron source disclosed in the claim (col. 7, lines 26-34 and 65-66).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on 7- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BNT
December 2, 2005

RICKY L. MACK
PRIMARY EXAMINER